Patent claims

101. Enzyme component system (ECS) as a combined oxidation and bleaching system for the preparation of special highly selective oxidants, consisting of

a) system component 1): at least one hydrolase selected from the group consisting of the enzyme classes 3.1, 3.1.1, 3.1.2, 3.1.3, 3.1.4 or 3.1.7 or at least one hydrolase selected from the group consisting of the enzyme classes 3.5, 3.5.1, 3.5.2, 3.5.3, 3.5.4, 3.5.5 or 3.5.99,

b) system component 2): at least one compound selected from the group of fatty acids consisting C_6 to C_{26} (saturated, monounsaturated or polyunsaturated) fatty acids,

c) system component 3): at least one oxidant precursor for reaction with the enzymes,

d) system component 4): at least one compound selected from the group of carbonyl compounds.

102. Enzyme component system according to claim 101, comprising that enzymes of class 3.1.1.3 lipases (triacylglycerol lipase, triglyceroacyl hydrolases) are used as system component 1.

103. Enzyme component system according to claim 101, comprising that enzymes of class 3.5.1.4 amidases, or class 3.5.5.1, nitrilases, are used as system component 1.

104. Enzyme component system according to claim 101, comprising that enzymes of class 3.1.1.3 (lipases) are obtained selected from the group of microorganisms and mammal tissue and plant tissue consisting of *Candida antarctica, Candida rugosa, Candida lipolytica, Candida cylindraceae, Candida spec., Geotrichum candidum, Humicula lanuginosa, Penicillium cambertii, Penicillium roqufortii, Aspergillus spec., Mucor javanicus, Mucor mehei, Rhizopus arrhizus, Rhizopus niveus, Rhizopus delamar, Rhizopus spec., Chromobacterium viscosum, Pseudomonas cepacia and Pseudomonas spec., from wheat seedlings or pancreas.*

105. Enzyme component system according to claim 101, comprising that it contains enzymes from fungi, bacteria, animals or plants obtained from natural organisms or organisms modified by genetic engineering or modified enzymes or part of enzymes.

106. Enzyme component system according to claims 101 and 105, comprising that the enzymes of classes 3.5.1.4 and 3.5.5.1 are obtained selected from the group of micro-organisms consisting *Pseudomonas aeruginosa, Pseudomonas putida, Pseudomonas acidovorus, Pseudomonas spec., Aspergillus nidulans, Aspergillus spec., Brevibacterium spec., Streptococcus pneumoniae and Rhoducoccus spec.*.

107. Enzyme component system according to claims 101 and 105, comprising that as modified enzymes, enzyme constituents, prosthetic groups or mimicking substances are used as enzymatic catalysts.

108. Enzyme component system according to claim 101, comprising that it contains as system component 2) one or more compounds selected from the group of saturated, monounsaturated or polyunsaturated fatty acids consisting of C_6 to C_{26} fatty acids according to Appendix 1.

109. Enzyme component system according to claim 108, comprising that it contains as system component 2) tetradecanoic acid (myristic acid) or dodecanoic acid (lauric acid).

110. Enzyme component system according to claim 101, comprising that it contains as system component 3) at least one oxidant precursor: peroxides (H_2O_2), a compound selected from the group of organic peroxides consisting of Mg- monoperoxyphthalate, ditert.butyl peroxide, cumene hydroperoxide, lauroyl peroxide, 3-chloroperoxybenzoic acid, dicumyl hydroperoxide, methyl ethyl ketone peroxide, benzoyl peroxide, diperoxydodecanedioic acid Na salt and compounds selected from the group of per-compounds consisting of perborate, persulfate, percarbonate, perphosphate, percarbamide, perchlorate.

111. Enzyme component system according to claim 101 and 110, comprising that it contains as system component 3) H_2O_2-activating ions selected from the group of transition metals consisting of Mo^{6+}, W^{6+}, Va^{5+} or compounds selected from the group cyano-compounds consisting of nitrilamines or dicyandiamines.

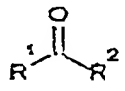
112. Enzyme component system according to claim 101 and 110, comprising that it contains H_2O_2, as system component 3).

113. Enzyme component system according to claim 101 and 110, comprising that it contains as system component 3) H_2O_2 generated in situ from glucose and GOD and O_2.

114. Enzyme component system according to claim 110 and 110, comprising that it contains as system component 3) besides per-compounds also a bleaching activator: TAED (tetraacetylethylenediamine), TAGU (tetraacetylglycoluril) and iso-NOBS (sodium p--Isononanoyloxy- benzenesulfonate).

115. Enzyme component system according to claims 101 and 110 to114, comprising that it contains as system component 3) besides the peroxides or per-compounds also air or oxygen wherein air and O_2 can be used at atmospheric pressure or at a slightly positive pressure of up to 2 bar.

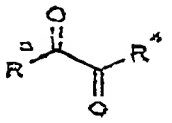
116. Enzyme component system according to claim 101, comprising that it contains as system component 4) at least one ketone of general formula I:



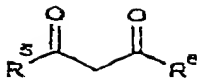
I

The R^1 and R^2 groups can be equal or different and denote aliphatic or aromatic groups. Moreover, the R^1 and R^2 groups can form a ring containing besides carbon also heteroatoms such as nitrogen, oxygen and sulfur.

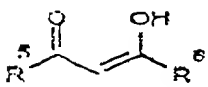
117. Enzyme component system according to claim 101, comprising that it contains as system component 4) a 1,2-diketone of formula II, a 1,3-diketone of formula III or a polyketone (polyketide) as well as a tautomeric enol of formula IV



II



III



IV

wherein the R^3 to R^6 groups, once again, can be equal or different and denote aliphatic or aromatic groups. Moreover, groups R^3 and R^4 and groups R^5 and R^6, together, can form a ring containing besides carbon also heteroatoms such as nitrogen, oxygen or sulfur.

118. Enzyme component system according to claim 101, comprising that it contains as system component 4) compounds selected from the group of carbonyl compounds consisting of hydroxyketones, 1,3-unsaturated ketones, oxydicarboxylic acid, quinones and halogenated ketones.

119. Enzyme component system according to claim 101, comprising that it contains as system component 4) a compound selected from the group as those listed in Appendix 2.

120. Enzyme component system according to claim 101, comprising that it contains additionally a polymerization catalyst, in particular, a phenolic substance or polycyclic compound with several oxidizable hydroxyl groups according to Appendix 3.

121. Enzyme component system according to claims 101 to120, comprising to add to it as an additional system an enzymatic oxidation system with enzyme action- enhancing compounds, said system containing:
a) at least one suitable oxidation catalyst
b) at least one suitable oxidant
c) at least one mediator selected from the group of N-hydroxy compounds consisting of hydroxylamines, hydroxylamine derivatives, hydroxamic acids, hydroxamic acid derivatives, aliphatic, cycloaliphatic, heterocyclic or aromatic compounds containing at least one N-hydroxy, oxime, N-oxy or N,N'-dioxy function or at last one mediator from the group of amides consisting of hydrazides or 1,2,4-triazolidin- 3,5-diones (urazoles) or at least one mediator from the group of imides consisting of hydantoins, or at least one mediator from the group of oxocarbons.

C 1 cont.

122. Enzyme component system according to claim 101 to 120, comprising to add to it as an additional system an enzymatic oxidation system with enzyme action- enhancing compounds, said system containing:
at least one mediation enhancer selected from the group consisting of carbonyl compounds, aliphatic ethers, phenol ethers or olefins (alkenes) or at least one mediation enhancer selected from the group consisting of NO-, NOH- and HRN-OH compounds or amides consisting of hydrazides or urazoles or imides consisting of hydantoins or oxocarbons.

123. Enzyme component system according to claim 101 to 120, comprising to add to it as an additional system an enzymatic oxidation system with enzyme action-enhancing compounds, said system containing:

at least one mediation enhancer selected from the group consisting of cation radical-generating substances, of the phenothiazine or phenoxazine type or of the (R=N-N=R) type

(ABTS) or from the group of aryl-substituted alcohols (nonphenols) consisting of veratryl alcohol or from the group of phenol derivatives consisting of p-hydroxycinnamic acid, 2,4-dichlorophenol, p-hydroxy- benzenesulfonate, vanillin (4-hydroxy-3-methoxybenzaldehyde), p-hydroxybenzoic acid, 5-amino-2- hydroxybenzoic acid (5-aminosalicylic acid) or Wurster-type radical cation compounds consisting of p- phenylenediamine, N,N-dimethyl-p-phenylenediamine, N,N-diethyl-p-phenylenediamine, N,N,N',N'-tetramethyl-p-phenylenediamine, 2,3,5,6-tetramethyl-p-phenylenediamine or from the group of radical anions consisting of semiquinones, which can be generated by enzymatic oxidation of hydroquinones.

124. Enzyme component system according to claim 101 to 120, comprising to add to it as additional enzymatic oxidation catalyst enzymes selected from the group of oxidoreductases consisting of classes 1.1.1. to 1. 97 :
cellobiose: oxygen-1-oxidoreductase (cellobiose oxidase) (1.1.3.25),
cellobiose: quinone-1-oxidoreductase (1.1.5.1), bilirubin oxidase (1.3.3.5), cytochrome oxidase (1.9.3), oxygenases, lipoxygenases (1.13, 1.14), superoxide dismutase (1.15.11), ferrioxidase consisting of ceruloplasmin (1.16.3.1); enzymes selected from the group 1.10 consisting of catechol oxidase (tyrosinase) (1.10.3.1), L-ascorbate oxidase (1.10.3.3), O-aminophenol oxidase (1.10.3.4) and laccase (benzodiol:oxygen oxidoreductase) (1.10.3.2); enzymes selected from the group 1.11 consisting of cytochrome C peroxidase (1.11.1.5), catalase (1.11.1.6), peroxidase (1.11.1.7), iodide peroxidase (1.11.1.8), glutathione peroxidase (1.11.1.9), chloride peroxidase (1.11.1.10) and L- ascorbate peroxidase (1. 11. 1. 11), phospholipid hydroperoxide glutathione peroxidase (1. 11. 1. 12), manganese peroxidase (1.11.1.13) and diarylpropane peroxidase (ligninase, lignin peroxidase) (1.11.1.14).

125. Enzyme component system according to claims 101 and 124, comprising that enzymes selected from the group of oxidoreductases consisting of laccases or peroxidases or both are used as oxidation catalysts.

126. Enzyme component system according to claim 124 and 125, comprising that it contains laccases or peroxidases or both selected from the group of white rotting fungi consisting of *Trametes versicolor*, *Trametes spec.*, *Phlebia spec.*, *Pleurotus spec.*, *Phanerochaete chryosporium*, *Agaricus spec.* and also other fungi, bacteria, plant and animal cells obtained from natural organisms or organisms modified by genetic engineering.

C1 Cont.

127. Enzyme component system according to claim 101, 124 to 126 comprising that modified enzymes, enzyme constituents, prosthetic groups or mimicking substances are used as the enzymatic catalysts.

128. Enzyme component system according to claim 121 to 127, comprising that it employs as additional oxidants air, oxygen, ozone, a compound selected from the group of peroxides consisting of H_2O_2, an organic peroxide, a compound selected from the group of peracids consisting of peracetic, performic, persulfuric, pernitric, metachloroperoxybenzoic and perchloric-acid, a compound selected from the group of per-compounds consisting of a perborate, percarbonate and persulfate, or oxygen species and the radicals thereof consisting of the OH, OOH and OH^+ radicals, superoxide (O_2^-), dioxygenyl cation (O_2^+), singlet oxygen, ozonide (O_3^-), dioxiranes, dioxitanes or Fremy radicals.

129. Enzyme component system according to claim 101 and 121, comprising that additionally mediators and mediation enhancers are used and that these compounds are such those are shown in Appendix IV and IVa

130. Enzyme component system according to claims 101, 121 and 129, comprising that the additional mediator/mediation enhancer ratio is from 5000:1 to 5:1.

131. Use of the enzyme component system according to claim 101 in a process for the delignification, modification, bleaching of cellulose/wood pulp from wood or annual plants and of high yield wood pulps (groundwood and refiner pulp) and deinked pulps, in the treatment of paper production waste water (grinder waste water, TMP waste water) and of waste water from other branches of the industry consisting of wood pulp waste water and textile production waste water, among others, for the production of lignin solutions or gels and of the corresponding binders/adhesives, and for the production of wood-based composites, in a process for the enzymatic printing ink removal during the deinking of waste paper, as an oxidation system in organic synthesis, in a process for the enzymatic liquefaction of coal, in a process for detergent bleaching, and in a process for bleaching and decolorizing textile fabrics including wool.

132. Use of the enzyme component system according to claim 131 in a process for the delignification, modification, bleaching of cellulose/wood pulp from wood or annual plants and of high yield wood pulps (groundwood and refiner pulp) and deinked pulps, whereby the reaction of the enzyme component system is carried out at a pH from 2 to 11, at a temperature from 20° to 95 °C, at a pulp consistency from 0.5 to 40%, in the presence of oxygen or air at atmospheric pressure or a slightly positive pressure (up to 2 bar), and system component 1, namely lipase from *Humicula lanuginosa*, is used at a concentration from 0.05 to 5 mg and amidase from *Pseudomonas aeruginosa* is used at a concentration from 40 to 200 IU, and system component 2, namely one or more fatty acids, C_6 to C_{26} fatty acids, are used at a concentration from 0.05 to 20 mg and system component 3, namely the oxidant precursor, peroxides, is used at a concentration from 0.05 to 20 mg (100%), and system component 4, namely a ketone, is used at a concentration from 0.05 to 20 mg, each case based on 1 g of absolutely dry pulp.

133. Use of the enzyme component system according to claim 131 in a process for the delignification, modification, bleaching of cellulose/wood pulp from wood or annual plants and of high yield wood pulps (groundwood and refiner pulps) and deinked pulps, whereby an acid wash or a Q-step is used before or after the reaction of the enzyme component system or before and after and the acid wash is carried out at 60-120 °C, at pH 2 to 5:5, for 30-90 min and at 4%-20% pulp consistency, and the Q-step is carried out with 0.05% -1 % of chelator at 60°-100°C, at pH 2 to 5.5 for 30-90 min and at a pulp consistency of 4%-20%.

C1 Cont.

134. Use of the enzyme component system according to claim 131 in a process for the delignification, modification, bleaching of cellulose/wood pulp from wood or annual plants and of high yield wood pulps (groundwood and refiner pulps) and deinked pulps, whereby the acid wash and the Q-step are carried out for 1 hour at 60°-90°C, at pH 2 to 5 and at 10% pulp consistency.

135. Use of the enzyme component system according to claim 131 in a process for the delignification, modification, bleaching of cellulose/wood pulp from wood or annual plants and of high yield wood pulps (ground wood and refiner pulps) and deinked pulps, whereby said system can be used before or after any possible treatment of the pulp by single or multiple digestion, bleaching steps or other pre- and post-treatments, such as alkaline bleaching, alkaline extraction, washing, acid treatment, Q-step, O_2-delignification step, peroxide bleaching step, O_2-promoted peroxide step, pressurized peroxide step, peracid step,

peracid- promoted O_2 or peroxide step, ozone bleaching step, dioxirane step, polyoxymetalate step, Cl_2-delignification step, ClO_2- bleaching step, Cl_{12} /ClO_2- bleaching step, reductive bleaching steps, sulfonation steps, NO/NO_2 treatments, nitrosylsulfuric acid treatment, swelling steps, enzyme treatments selected from the group of hydrolases consisting of cellulases, xylanases, mannases, pectinases, proteinases, lipases, amidases, or selected from the group of oxidoreductases consisting of laccases, peroxidases , or several combined treatments.

136. Use of the enzyme component system according to claim 131 in a process for the delignification, modification, bleaching of cellulose/wood pulp from wood or annual plants and high yield wood pulps (groundwood and refiner pulps) and deinked pulps, whereby the swelling step is carried out with the aid of substances selected from the group of glycols consisting of propylene glycol, ethylene glycol, ethylene glycol dimethyl ether, but also with the aid of solvents selected from the group of alcohols consisting of methanol, ethanol, butanol, amyl alcohol, cyclohexanol, benzyl alcohol and chlorohydrin, selected from the group of phenols consisting of phenols, methylphenols and methoxyphenols, selecting from the group of aldehydes consisting of formaldehyde and chloral, selecting from the group of mercaptans consisting of butyl mercaptan, benzyl mercaptan and thioglycolic acid, selecting from the group of organic acids consisting formic acid, acetic acid and chloroacetic acid, selecting from the group of amines consisting of ammonia and hydrazine, selecting from the group of hydrotropic solvents consisting of concentrated solutions of sodium benzoate, and selecting from the group of other basic solvents consisting of OH^-/H_2O or OH^-/alcohol and benzenes, pyridines, dioxane. ethyl acetate as other substances.

137. Use of the enzyme component system according to claim 131 in a process for the delignification, modification, bleaching of cellulose/wood pulp from wood or annual plants and of high yield wood pulps (groundwood and refiner pulps) and deinked pulps, whereby there is additionally added to the reaction solution a complexing agent consisting of ethylenediaminetetraacetic acid (EDTA), diethylenetriaminepentaacetic acid (DTPA), hydroxy-ethylenediaminotriacetic acid (HEDTA), diethylenetriaminopentamethylenephosphonic acid (DTMPA), nitrilotriacetic acid (NTA), polyphosphoric acid (PPA) or other complexing agents for iron, manganese or copper: diethylamine or hydroxylamine.

138. Use of the enzyme component system according to claim 131 in a process for the delignification, modification, bleaching of cellulose/wood pulp from wood or annual plants and of high yield wood pulps (groundwood and refiner pulps) and deinked pulps, said process being carried out in several steps and whereby between each step is applied a washing or washing and extraction step with alkaline hydroxide solution, or neither washing nor extraction takes place.

139. Use of the enzyme component system according to claim 131 in the treatment of paper production waste water (grinder wastewater, TMP wastewater) and of waste water from other branches of the industry, such as wood pulp waste water and textile production waste water, among others, whereby the reaction of the enzyme component system is carried out at pH 2 to 11, at a temperature from 20° to 95°C, in the presence of oxygen or air at atmospheric pressure or slightly positive O_2 pressure (up to 2 bar), and system component 1, namely lipase from *Aspergillus spec.* is used at a concentration from 0.05 to 50 mg, and system component 2, namely one or more fatty acids, C_6 to C_{26} fatty acids, is used at a concentration from 0.05 to 200 mg, and system component 3, namely the oxidant precursor, peroxides, is used at a concentration from 0.05 to 200 mg (100%), and system component 4, namely a ketone, is

used at a concentration from 0.05 to 200 mg, and that a polymerization catalyst, is used at a concentration from 0.005 to 200 mg, the concentrations in all cases being based on 1 litre of waste water.

140. Use of the enzyme component system according to claim 131 for the production of lignin solutions or gels and of the corresponding binders/adhesives, and for the production of wood-based composites, whereby the reaction of the enzyme component system is carried out at pH 2 to 11, at a temperature from 20° to 95°C, in the presence of oxygen or air at atmospheric pressure or slightly positive O_2 pressure (up to 2 bar), and system component 1, namely lipase from *Humicola lanuginosa* is used at a concentration from 0.05 to 50 mg, and system component 2, namely one or more fatty acids, C_6 to C_{26} fatty acids, is used at a concentration from 0.05 to 200 mg, and system component 3, namely the oxidant precursor, peroxides is used at a concentration from 0.05 to 200 mg (100%), and system component 4, namely a ketone, is used at a concentration from 0.05 to 200 mg, and that a polymerization catalyst, is used at a concentration from 0.005 to 200 mg, the concentrations in all cases being based on 1 litre of waste water.

141. Use of the enzyme component system according to claim 131 in a process for the enzymatic printing ink removal during the deinking of waste paper, whereby the reaction of the enzyme component system is carried out at pH 7 to 11, at a temperature from 20° to 95 °C, in the presence of oxygen or air at atmospheric pressure or slightly positive O_2 pressure (up to 2 bar), and system component 1, namely lipase from *Humicola lanuginosa*, is used at a concentration from 5 to 500 mg, and system component 2, namely one or more fatty acids, C_6 to C_{26} fatty acids, is used at a concentration from 5 to 2000 mg, and system component 3, namely the oxidant precursor, peroxide, is used at a concentration from 5 to 5000 mg (100%), and system component 4, namely a ketone, is used at a concentration from 5 to 2000 mg, and that, to change the optimum pH for the printing ink removal reaction and to affect the swelling behavior of the waste paper, a phenolic or polycyclic substance with several oxidizable hydroxyl groups, is used at a concentration from 1 to 2000 mg, in each case based on 1 kg of air-dried waste paper.

142. Use of the enzyme component system according to claims 131 and 141 in a process for the enzymatic printing ink removal during the deinking of waste paper, whereby a reducing agent such as sodium bisulfate, sodium dithionite, ascorbic acid, a thiol compound, mercapto compound or glutathione, is added at a concentration from 0.1 to 1000 mg per kg of air-dried waste paper.

143. Use of the enzyme component system according to claim 131, 141 and 142 in a process for the enzymatic printing ink removal during the deinking of waste paper, whereby, to collect the printing ink particles and to produce foam during flotation, a commercial collector, is used at a concentration from 1 to 5000 mg per kg of air-dried waste paper.

144. Use of the enzyme component system according to claims 131, 141 to 143 in a process for the enzymatic printing ink removal during the deinking of waste paper, whereby additional enzymes selected from the group of hydrolases consisting of cellulases, xylanases, mannases, pectinases and from the group of oxidoreductases are added.

145. Use of the enzyme component system according to claim 131 as an oxidation system in organic synthesis, whereby the reaction of the enzyme component system is carried out at pH 2 to 11, at a temperature from 20° to 95 °C, in the presence of oxygen or air at atmospheric pressure or slightly positive O_2 pressure (up to 2 bar), and system component 1,

namely lipase from *Humicola lanuginosa* is used at a concentration from 0.05 to 5 mg, and system component 2, namely one or more fatty acids, C_6 to C_{26}, fatty acids, is used at a concentration from 0.05 to 100 mg, and system component 3, namely the oxidant precursor, peroxide, is used at a concentration from 0.05 to 100 mg (100%), and system component 4, namely a ketone, is used at a concentration from 0.05 to 100 mg, the concentrations in all cases being based on 10 mmoles of substrate.

146. Use of the enzyme component system according to claim 131 and 145 as an oxidation system in organic synthesis, whereby an aromatic alcohol or an aromatic methyl compound is used as the substrate for the oxidation reaction according to the invention.

147. Use of the enzyme component system according to claim 131 in a process for the enzymatic liquefaction of coal, whereby the reaction of the enzyme component system is carried out at a pH from 2 to 11, at a temperature from 20° to 95°C, at a coal slurry consistency from 0.5 to 40%, in the presence of oxygen or air at atmospheric pressure or a slightly positive O_2 pressure (up to 2 bar), and system component 1, namely lipase from *Humicula lanuginosa* is used at a concentration from 0.05 to 20 mg, and system component 2, namely one or more fatty acids, C_6 to C_{26} fatty acids, is used at a concentration from 0.05 to 100 mg, and system component 3, namely the oxidant precursor, peroxide, is used at a concentration from 0.05 to 50 mg (100%), and system component 4, namely a ketone, is used at a concentration from 0.05 to 100 mg, in each case based on 1 g of coal (lignite).

148. Use of the enzyme component system according to claim 131 in a process for detergent bleaching, whereby the reaction of the enzyme component system is carried out at a pH from 2 to 12, at a temperature from 20° to 95°C, in the presence of oxygen or air at atmospheric pressure or at a slightly positive O_2 pressure (up to 2 bar), and system component 1, namely lipase from *Humicula lanuginosa*, is used at a concentration from 0.05 to 20 mg, and system component 2, namely one or more fatty acids, C_6 to C_{26} fatty acids, is used at a concentration from 0.05 to 50 mg, and system component 3, namely the oxidant precursor, peroxides, is used at a concentration from 0.05 to 50 mg (100%), and system component 4, namely a ketone, is used at a concentration from 0.05 to 50 mg, in each case based on 100 ml of washing solution.

149. Use of the enzyme component system according to claims 131 and 148 in a process for detergent bleaching, whereby the system is added to a detergent formulation with all its technically common and known detergent substances or detergent additives.

150. Use of the enzyme component system according to claim 131 in a process for bleaching and/or decolorizing textile fabrics, whereby the reaction of the enzyme component system is carried out at a pH from 2 to 11, at a temperature from 20° to 95°C, at a fabric density from 0.5 to 40% , in the presence of oxygen or air at atmospheric pressure or at a slightly positive O_2 pressure (up to 2 bar), and system component 1, namely lipase from *Humicula lanuginosa* is used at a concentration from 0.05 to 10 mg, and system component 2, namely one or more fatty acids, C_6 to C_{26} fatty acids, is used at a concentration from 0.05 to 20 mg, and system component 3, namely the oxidant precursor, peroxides, is used at a concentration from 0.05 to 20 mg (100%), and system component 4, namely a ketone, is used at a concentration from 0.05 to 20 mg, in each case based on 1 g of denim.